Videoconferencing Programs to Support Student and Educator Learning: A Summary of Final Reports

Prepared by
Stakeholder Technology Branch

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Alberta
Education

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Videoconferencing Programs to Support Student and Educator Learning: A Summary of Final Reports

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Jurisdictions indicate that videoconferencing can:

- *Be an effective tool in learning environments that blend a variety of instructional technologies;*
- *Benefit teacher professional development;*
- *Enhance student learning; and*
- *Enhance school jurisdictions' abilities to meet the needs of their students, educators and communities.*

– Excerpt from Executive Summary

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1. Background

Since November 2004, Alberta Education has supported initiatives to facilitate the educational and administrative uses of videoconferencing in Alberta schools. These initiatives have included targeted research projects, jurisdictional capacity funding, planning workshops, and the release of a research report entitled *Video-conferencing Research Community of Practice: Research Report*[1].

In August 2005, Alberta Education released a Call for Proposals for the Implementation of Video-conferencing Programs to Support Student and Educator Learning[2], also known as Phase II Extension, which sought proposals for projects that addressed one of the following themes:

1. Exploring learning environments that employ videoconferencing;
2. Supporting professional learning communities (PLC); or
3. Connecting classrooms for enhanced learning.

The fifteen successful respondents to this call are listed in the table below in alphabetical order by theme.

Lead	Partner	Project Title
Theme 1: Exploring Learning Environments that Employ Videoconferencing*		
Aspen View Regional Division No. 19	None	French as a Second Language Videoconferencing Initiative
Battle River School Division No. 31	None	Advancing Learning Incorporating Videoconferencing Environments – Project Alive
Wolf Creek School Division No. 72	None	Creating Powerful Distance-Learning Environments
Theme 2: Supporting Professional Learning Communities		
Black Gold Regional Division No. 18	Grande Yellowhead Regional Division & Edmonton Regional Learning Consortium (ERLC)	Using Videoconferencing to Support Professional Learning Communities
Canadian Rockies Regional Division No. 12	None	Connecting Kindergarten Learning Communities
Edmonton School District No. 7	None	The Role of Videoconferencing in Professional Learning Communities

* Note: The original wording for this theme area was "Exploring Blended Learning Environments." The wording has been changed to avoid confusion with the current Alberta Education definition of the term "blended learning."

[1] Alberta Education, *Video-conferencing Research Community of Practice: Research Report*, 2006, <http://www.vcalberta.ca/community/Research_Summary_Report_word_version_final.pdf>

[2] Alberta Education, *Call for Proposals for the Implementation of Video-conferencing Programs to Support Student and Educator Learning*, October 22, 2005

Lead	Partner	Project Title
Foothills School Division No. 38	Galileo Educational Network Association	Implementation of Videoconferencing Programs to Support Student and Educator Learning – Weavers of Virtual Networks
Livingstone Range School Division No. 68	University of Lethbridge, Alberta Teachers' Association	Leader2Leader
Northern Lights School Division No. 69	None	Improving Student Achievement Through District Professional Learning Communities
Parkland School Division No. 70	2Learn.ca Education Society and IBM	Supporting Professional Learning Communities Through the Implementation of Videoconferencing Programs – Ambassador Project (http://www.2learn.ca/ambassador/default.html)
Pembina Hills Regional Division No. 7	None	Maximizing Professional Collaboration Using Videoconferencing
Sturgeon School Division No. 24	None	Bringing Together Communities of Learners
Theme 3: Connected Classrooms for Enhanced Learning		
Golden Hills School Division No. 75	Royal Tyrell Museum & Golden Hills Virtual School	Paleontology Pathways and Partnerships
Horizon School Division No. 67	None	The Horizon Connection: Videoconferencing for Enhanced Learning
St. Albert Protestant Schools No. 6	None	Videoconferencing: Engaging Expanded Learning Opportunities and Collaboration in St. Albert Protestant Schools

Interim reports were submitted by each jurisdiction in Fall 2006. These reports were summarized in a paper, *Summary of Interim Reports – Phase II Extension (August 2005): Implementation of Videoconferencing Programs to Support Student and Educator Learning* (April 2007).

Early findings suggested that although awareness and excitement about the possibilities of videoconferencing to support student and educator learning were increasing, ensuring that the essential conditions for success were in place required time, effort, and patience. Early activities focused on project planning; professional development and training; and the acquisition, installation and testing of the technical infrastructure and equipment.

2. Purpose

The purpose of this summary report is to share the findings of the 15 Phase II Extension videoconferencing projects, as reported in their final reports, which were submitted in October 2007. Each jurisdiction was required to describe:

- The overall impacts and benefits of their involvement in the project;
- The degree to which the intended goals and deliverables were attained; and

- Their recommendations and plans for sustaining videoconferencing within their jurisdiction.

This report provides: background information (Section 1); an executive summary (Section 3); high-level summaries of each jurisdiction's reported impacts and benefits, attainment of goals and deliverables, recommendations, and plans for sustainability (Section 4); detailed jurisdictional summaries[3] by theme area (Appendix A); and references (Appendix B).

[3] Some of the reported impacts, benefits, attainment of goals and deliverables, recommendations, and plans for sustainability have been reworded for conciseness and consistency. However, care was taken to preserve the original intent.

3. Executive Summary

Alberta Education uses Calls for Proposals for technology innovation to support jurisdictions as they pilot new technologies and innovative practices. School jurisdictions participating in these projects become Alberta Education's research partners in examining new ways of using technology in teaching and learning. The one-time funding that is provided for these projects is targeted towards achieving the outcomes in the jurisdiction's research proposal, and the information is shared across the education system to provide all jurisdictions with information on best practices for technology implementation.

In August 2005, Alberta Education released a Call for Proposals for the Implementation of Videoconferencing Programs to Support Student and Educator Learning[4], also known as Phase II Extension. This Call for Proposals sought proposals for projects that addressed one of the following themes:

1. Exploring learning environments that employ videoconferencing;
2. Supporting professional learning communities (PLC); or
3. Connecting classrooms for enhanced learning.

Fifteen jurisdictions were successful respondents to this call. The projects were carried out over the 2005/2006 and 2006/2007 school years.

In their final reports, participating jurisdictions indicated that videoconferencing can:

- Be an effective tool in learning environments that blend a variety of instructional strategies and technologies;
- Benefit teacher professional development;
- Enhance student learning; and
- Enhance school jurisdictions' abilities to meet the needs of their students, educators and communities.

In summarizing their attained goals and deliverables, jurisdictions revealed the following trends:

- Videoconferencing technologies are in-use and the demand is growing;
- The use of videoconferencing in learning environments is expanding and providing broader program choices to students, especially in rural or remote communities where subject-matter expertise is scarce and/or enrolments are low;
- Local and global connections with specialists and peers are increasingly being made by students and teachers via videoconference, thereby enhancing teaching and learning experiences;
- Professional learning communities (PLC) are thriving;
- Centralized supports for videoconferencing are being implemented; and
- Communication and promotion efforts are ongoing.

[4] Alberta Education, Call for Proposals for the Implementation of Video-conferencing Programs to Support Student and Educator Learning, October 22, 2005

Participating jurisdictions identified several conditions[5] that contributed to their successful implementation of videoconferencing, which are described below as recommendations for the continued successful implementation of videoconferencing in Alberta.

1. Demonstrate Leadership

   Central office staff, administrators, consultants, lead teachers, technology coordinators, and other educators can all play a role as "videoconference champions." Collectively, these leaders can:

   - Raise awareness of the benefits of videoconferencing to support student and educator learning;
   - Model effective uses of videoconferencing (e.g., for meetings, virtual school visits, professional development, and collaborations and interactions among teachers, students and specialists; and within learning environments that blend various instructional technologies); and
   - Ensure the required financial, technical, pedagogical and professional development supports are in place to effectively use this technology.

   At the provincial level, Alberta Education can help to advance the uptake of videoconferencing by supporting school jurisdictions in their efforts to implement videoconferencing. Faculties of Education can assist by ensuring pre-service teachers understand and can apply pedagogical best practices in the use of videoconferencing and related technologies.

2. Establish and Implement Supportive Policies and Procedures

   Supportive policies and procedures provide a framework for decision making and help to ensure consistent, reliable, effective and pedagogically sound use of videoconferencing. Centralizing some activities and services has been shown to be effective (e.g., timetabling, technical support, equipment management).

3. Secure Necessary Resources

   Resources are required to maintain, evergreen, and expand jurisdictional videoconferencing capacity. Multiple funding models have been suggested, including:

   - Allocating a portion of existing/future jurisdictional/school budgets;
   - Exploring industry/ academic/community partnerships;
   - Implementing cost recovery models; or
   - A combination of the models.

4. Focus on Teaching and Learning

   When viewed as a way of supporting student and educator learning goals, the focus of videoconferencing remains on teaching and learning rather than on the technology itself. Linking videoconferencing to jurisdictional and school-based educational goals and

[5] These conditions have been synthesized from the summary of participating jurisdictions' impacts and benefits, goals and deliverables, recommendations, and plans for sustainability (Section 4: Summary of Findings).

plans, educator growth plans, the attainment of curriculum outcomes, and/or Alberta Initiative for School Improvement (AISI) project goals can help to maintain this focus.

This is especially important in learning environments that blend various instructional technologies including videoconferencing. In these environments, it is critical to engage students through inquiry- and research-based teaching and learning strategies. The technology should be invisible, acting merely as an enabler of authentic learning experiences. It is necessary for teachers to choreograph student-to-student or student-to-expert collaborations, interactions, presentations or discussions, and provide access to media-rich resources.

5. Provide Ongoing Professional Development

   Provide opportunities for purposeful, relevant, and job-embedded professional learning where teachers engage in pedagogical collaborations and reflective dialogue with their colleagues, through active participation in a PLC or other professional development activity. Technical and pedagogical professional development should be ongoing, ranging from awareness and basic equipment training to best practices in the instructional uses of videoconferencing.

6. Support the Technology

   Provide prioritized on-site and centralized technical support services (e.g., installation, testing, maintenance, repair/replacement) and training, as appropriate, to ensure videoconferencing, related equipment, and networks function reliably.

7. Ensure Ongoing Communication and Dissemination

   Ensure all stakeholders are informed of videoconferencing activities and have an opportunity to see demonstrations that emphasize the potential of videoconferencing to enhance learning. Promote the benefits of videoconferencing, disseminate success stories and share lessons learned.

8. Assess Progress and Plan for the Future

   Engage in research, update needs analyses, and routinely assess/evaluate progress. Use this information to ensure continuous improvement while planning for the future.

To date, participating jurisdictions reported varying degrees of success in the implementation of videoconferencing. This was due to a variety of self-reported challenges at the local level (e.g., technical, professional development, community support, human resources, and timetabling issues). However, regardless of where a jurisdiction finds itself on the path to effective implementation of videoconferencing to support student and educator learning, it is apparent that consideration of the aforementioned recommendations would be instrumental to its continued success.

4. Summary of Findings

Summary of Impacts and Benefits

This project has shown that videoconferencing can be valuable to the education community and an effective tool in learning environments that blend various instructional technologies. It can also benefit teacher professional development, enhance student learning, and enhance school jurisdictions' abilities to meet the needs of their students, educators and communities. Specific impacts and benefits, as reported by the participants in this project, are summarized below.

An Effective Tool in Learning Environments

Videoconferencing has been shown to be an effective tool for teaching and learning when blended with effective instructional strategies and other technologies.

Videoconferencing, when blended with other instructional technologies[6], has been demonstrated to be an effective tool for teaching and learning in several subject areas (e.g., French as a Second Language, French Immersion 9, Mathematics 31/30 and Applied, Paleontology 15, Physics 20, Physics 30, and French 13). As a result, increased choice of viable course delivery methods are now available in many small, rural and remote communities in Alberta, especially in areas where subject-matter expertise is scarce and/or enrolments are low.

Where reported, academic achievement data indicates that student performance in courses where videoconferencing was employed in the learning environment is comparable to students who received traditional classroom instruction. Student and teacher survey results also indicate that student motivation and excitement can be enhanced through videoconferencing, in large part because of the interaction and sharing with peers and experts and the authenticity of the learning experience.

Benefits To Teacher Professional Development

Teachers are becoming more appreciative of and comfortable with videoconferencing.

As a result of participation in this project, teachers are becoming more appreciative of and comfortable with videoconferencing and Information and Communication Technology (ICT) infusion in general. Teachers also benefited from the various videoconference-based professional learning opportunities afforded them through this project. The most helpful learning opportunities:

- Improved teachers' instructional planning skills and expanded their range of teaching strategies (e.g., teachers improved their understanding and application of inquiry-based and research-based teaching and learning strategies);
- Improved teachers' confidence when communicating with parents about the reading process and the importance of phonemic awareness;

[6] Examples include electronic whiteboards, learning management systems, conferencing software, collaboration software, site-based tutorials, and print distance learning materials.

- Improved teachers' understanding of and consistency in terms of assessment; and
- Allowed teachers to take part in job-embedded professional learning experiences, where they engaged in pedagogical collaborations and reflective dialogue with their colleagues, through active participation in a PLC or other professional development activity. For example, teachers were able to share expertise, develop common policies and consistent practices, deepen their understanding of cross-disciplinary connections and cross-grade planning, develop and share curriculum-based projects and lesson plans, and share information about student progress.

Videoconferencing supports PLCs, especially when used to enable ongoing, purposeful, and focused one-on-one and/or small group collaborations and reflective dialogue among teachers and specialists.

It was noted that where travel distance or road conditions were significant issues, attendance by teachers at PLC meetings increased due to improved accessibility through videoconferencing.

Enhancements To Student Learning

Videoconferencing has been shown to benefit students by:

- Providing them with authentic learning opportunities that involve collaboration and interaction with their peers and subject-matter experts within and beyond their school;
- Enhancing their academic performance[7], self-confidence, and accountability, as well as their desire for more challenging academic experiences;
- Improving their presentation, communication and media awareness skills, teamwork skills, critical thinking and independent inquiry skills, as well as their comfort in the use of various technologies;
- Stimulating their curiosity and improving their motivation to learn; and
- Developing a "sense of community/globalization" through dialogue with communities with diverse perspectives.

The positive impact of videoconferencing on student learning was evidenced by their increased motivation, as well as the quality of their work, their dedication to completion, their increased self-confidence, and the responsibility they took for their own learning.

Enhancements To School Jurisdictions' Abilities to Meet Pedagogical Needs

The availability of videoconferencing suites has improved jurisdictions' abilities to:

- Provide students with access to courses, programs and specialists;

[7] Example: students from one jurisdiction reported improved performance scores following targeted reading intervention strategies by videoconferencing.

- Provide specialized training and support to staff involved in special education (e.g., access to speech pathologists);
- Support administrator and new teacher mentorship;
- Provide access to subject-matter experts;
- Reduce costs and "windshield time;"
- Facilitate effective administrative and committee meetings as well as virtual school visits;

Access to videoconferencing facilities have enhanced school jurisdictions' abilities to perform those functions and provide those services that help to meet the needs of their students, teachers and communities.

- Offer parenting workshops;
- Foster a culture of innovation and problem-solving; and
- Provide accessible, quality professional development opportunities to its educators. In some cases, these opportunities to collaborate have created new levels of cooperation and coordination within and beyond jurisdictions' schools.

Benefits for Communities

Most jurisdictions noted the increased community awareness and appreciation of the overall benefits of videoconferencing as described above. However, three jurisdictions highlighted additional specific benefits to their communities as follows:

- The health region and community groups in the Battle River School Division are accessing the jurisdiction's videoconferencing facilities to work with parent councils;
- Other educational organizations in the Northern Lights School Division are being provided with evening access to the videoconferencing suites; and
- A community organization in Parkland School Division used videoconferencing to share its experiences during a trip to Central America. The broader community in this jurisdiction also benefited from a partnership with 2Learn.ca Education Society that produced an online best practice resource (see http://www.2learn.ca/ambassador/) that helped to communicate the experiences of project participants.

Summary of Attained Goals and Deliverables

Overall, the goals and deliverables set out by each participating jurisdiction in this videoconferencing project were attained, albeit with some challenges and time adjustments.[8]

Videoconferencing Technologies are In-use and Demand is Growing

All 15 jurisdictions purchased, installed, and tested a combination of fixed and mobile videoconferencing suites. These suites are being used for a variety of purposes.

Many jurisdictions have also purchased and are using electronic whiteboards, high quality webcams, course management software, desktop collaboration software, second language software, document cameras, and other instructional technologies to enhance the videoconferencing experience. One jurisdiction indicated that it is using software to

[8] See each jurisdictional summary for details.

facilitate remote central management of its videoconferencing suites. This jurisdiction has also created a global address book, implemented a simple dialing system, and is generating usage reports and statistics.

Based on its experience implementing learning environments that blend various technologies, including videoconferencing, one jurisdiction identified four essential components for effective learning environments. These are, in order of priority: high-quality audio, real-time data sharing, high-quality video, and asynchronous tools.

With continued demonstration and promotion of the benefits of videoconferencing, it is anticipated that the demand for these technologies will increase in most jurisdictions. In some cases, schools have already decided to purchase their own videoconferencing equipment, peripherals and supporting instructional technologies.

Learning Environments that Employ Videoconferencing are Expanding

Many of the courses initiated during this project that used videoconferencing are continuing to be offered, while others are under development or planned for implementation in semester two of the 2007/2008 school year (e.g., French as a Second Language, French Immersion 9, Mathematics 30 Applied, Mathematics 31, Paleontology 15/25,Physics 20/30).

In addition, supplemental instruction and instructional supports are being provided via videoconferencing in various subject areas (e.g., Art, Biology 30, English as a Second Language, Mathematics 24, Mathematics 31, Science 24, Social Studies 20).

Local and Global Connections are Being Made

In addition to the courses and instructional supports being offered via videoconferencing, students' classroom learning experiences were enhanced during this project by providing them with opportunities to interact and collaborate with people from near and far. These videoconference events brought experts into the classroom and provided students with external audiences for their presentations. Students were involved in a range of activities including author studies, virtual field trips, presentations, discussions and consultations with specialists, and activities designed to develop reading and descriptive writing skills.

Many other events and projects are in the planning stages for the 2007/2008 school year. For example, the first of four videoconference sessions between students at Queen Elizabeth High School in Edmonton and students in Pakistan was profiled in the Edmonton Journal (Thursday, November 29, 2007)[9]and one-hour Read Around the Planet class-to-class videoconferences across several jurisdictions are continuing from February 25 to March 4, 2008 (Tech.News, Vol 7 No 4)[10].

Professional Learning Communities are Thriving

Supporting Professional Learning Communities was the primary theme for nine school jurisdictions. To varying degrees, these jurisdictions reported a growing interest and participation in PLCs by educators and are seeing the number of PLCs increase. This trend is attributed in part to the benefits for educators described above, and to the fact

[9] See http://www.fournationclassroom.com/ for more information.
[10] See http://www.twice.cc/read/ for more information.

that time and distance challenges are being minimized through the use of videoconferencing to connect PLC participants.

In addition to the professional development activities occurring through the PLCs in these nine jurisdictions, professional development sessions via videoconferencing are ongoing in all participating jurisdictions. These professional development sessions focus on a range of topics including curricular implementation, ICT infusion, videoconferencing best practices and project design, mentorship, special education supports, and assessment.

Centralized Supports are Being Implemented

Several jurisdictions are implementing centralized supports. For example:

- Edmonton Public Schools established an online community of practice, and has developed a cost recovery model to support the expansion of videoconferencing in the jurisdiction. In addition, its Consulting Services and District Technology staff are offering a variety of professional development events, services and supports across the jurisdiction;
- Livingstone Range School Division developed supporting documentation and processes for booking, initiating and running videoconference meetings, sessions or events;
- Northern Lights School Division developed a rental/service policy to provide other educational organizations with evening access to its videoconferencing suites;
- St. Albert Protestant Schools developed an innovation implementation checklist for use in the jurisdiction; and
- Wolf Creek School Division established a centralized support strategy that included dedicated and prioritized technical supports, scheduling and a standard room set up.

Communication and Promotion Efforts are Continuing

Jurisdictions are continuing with communications and promotional efforts to ensure the successful implementation of videoconferencing to support student and educator learning.

Summary of Recommendations and Plans for Sustainability

Recommendations

Overall, the recommendations made by each participating jurisdiction focused on addressing challenges related to leadership, technology, professional development and training needs, learning environments, communications, processes and policies, and resources. The recommendations have been provided by the participating jurisdictions and do not necessarily represent the views of Alberta Education.

Demonstrate Leadership

- Provide strong senior management support at school and jurisdictional levels.
- Ensure a group of champions are accessible to teachers via videoconference to discuss pertinent issues, strategies and advantages for classroom use of the technology.

- Ensure jurisdiction-office and school-based administrators model the use of videoconferencing for meetings and professional development.
- Work with teacher training programs to ensure pre-service teachers are aware of and understand how best to use videoconferencing technologies and associated supportive technologies, such as electronic whiteboards.

Acquire and Support Technology

- Provide prioritized technical support to ensure issues are addressed in a timely manner. Technical support and testing of outside conference connections is essential to minimize setup problems.
- Establish a strategy and protocols to achieve the best possible audio (e.g., minimize ambient noise and consider implementing a wireless microphone where students are having difficulty hearing).
- Permanently mount projectors and electronic whiteboards to minimize configuration and alignment delays.
- Effectively support learning environments that blend various instructional technologies including videoconferencing, student e-mail accounts, learning management system (LMS) software as well as laptop or tablet PCs and electronic whiteboard presentation software.

Support Professional Learning Communities (PLC), Professional Development and Training

It was recommended that effective PLCs facilitated by videoconferencing be supported by:

- Anticipating a pedagogical and technical learning curve;
- Distributing agendas and related materials for PLC meetings in advance of videoconferences;
- Developing challenging questions that require reflection;
- Assigning a chair;
- Ensuring that a lead technician with videoconferencing expertise is part of the PLC;
- Establishing clear expectations, roles and responsibilities of all participants at delivering and receiving sites;
- Encouraging participants to develop positive relationships, and demonstrate support and respect for as well as trust and confidence in each other;
- Ensuring that all schools have an opportunity to showcase their expertise/contributions;
- Limiting the size of the group to three to five people to ensure everyone has opportunities to participate;
- Promoting communication among teachers before, during and after the videoconference sessions (e.g., plan for follow-up);
- Documenting procedures and processes, and diagramming equipment and networks for each site; and

- Providing support to the Videoconferencing Regional Leads Network and VCAlberta.ca. The Regional Leads are practicing educators from across the province that support other teachers with training, mentorship, classroom resources and connections to local, national and international content providers. The VCAlberta.ca website provides a one stop videoconferencing resource for Alberta's K-12 and post-secondary system.

As well, it was recommended that ongoing technical and pedagogical professional development be provided to staff, ranging from awareness and basic equipment training to best practices in the instructional uses of videoconferencing.

Facilitate Effective Learning Environments

- Select teachers who are willing to teach using videoconferencing, and who have experience with the course material and technology integration. Provide supports to teachers who deliver courses to multiple remote sites.
- Encourage inquiry and research-based teaching and learning as well as the infusion of ICT.
- Assign a lead contact at each remote site to respond to questions or concerns from teachers or students.
- Balance student numbers at remote and delivery sites, if possible, or ensure smaller total class sizes.
- Establish a strategy to enable and ensure students and teachers communicate with each other.
- Strive for a high ratio of synchronous versus asynchronous instructional time in the learning environment. Allowing for flexibility in schedules, especially for class start and end times around the lunch hour, can help to maximize synchronous instruction time.
- Be sensitive to the fact that videoconference-based course delivery may not be the best option for all students.
- Establish common school timetables and a universal clock within the jurisdiction.
- Strengthen and/or explore partnerships/relationships with a variety of knowledgeable external agencies (e.g., Royal Tyrrell Museum, Canadian Space Agency, University of Alberta, Alberta Legislature, the Edmonton Valley Zoo, Royal Alberta Museum) to develop and share curricular-based videoconference resources.

Ensure Ongoing Communication

- Ensure all stakeholders are informed of videoconferencing activities and have an opportunity to see demonstrations that emphasize the potential of videoconferencing to enhance learning.
- Disseminate success stories and share lessons learned.

Establish Supportive Policies and Processes

- Embed videoconferencing in school and jurisdictional planning processes.

- Centrally coordinate videoconferencing projects/initiatives to ensure successful implementation (i.e., funding, timetabling, access to technical support).
- Build a critical mass of users by: going slow; implementing the technology in stages (e.g., begin with a small pilot); forming a local cohort of technical and pedagogical experts; and demonstrating the value of videoconferencing to schools and the community.
- Update needs analyses and routinely evaluate progress to ensure continuous improvement. For example, one jurisdiction plans to continue developing its online videoconferencing group by introducing tools such as wikis and blogs, as well as developing a jurisdictional trouble tracking process and evaluate the anticipated demand for desktop videoconferencing.

Secure Necessary Resources

- Provide sufficient time and financial resources for technical and operational support as well as professional development to ensure videoconferencing becomes part of the school/jurisdiction's culture.

Plans for Sustainability

Jurisdictions' plans for sustainability of videoconferencing varied, from those that were limited in scope and duration to those that were comprehensive and long-term. Aspects of these plans aligned with many of the recommendations described in the previous summary.

Develop and Implement Supportive Videoconferencing Policies and Plans

Several jurisdictions have already undertaken the following steps, or are in the process of doing so:

- Incorporating videoconferencing as an integral component of their annual and three-year school/jurisdictional planning cycles;
- Developing a range of policies, procedures and manuals to support their videoconferencing activities (e.g., jurisdictional videoconference policies, videoconferencing etiquette, central timetabling, an innovation implementation checklist, community use of videoconferencing suites, online booking forms, system-wide improvement strategy);
- Developing technical support practices that ensure a reliable technical infrastructure;
- Establishing operational funding models to sustain existing and expand future jurisdictional videoconferencing capacity; and
- Acquiring additional videoconferencing suites.

Engage in Research

Jurisdictions are engaging in research related to:

- The acquisition of additional videoconferencing and related equipment (e.g., multipoint control units, Voice over Internet Protocol (VoIP), scanner/printer/fax machines, head end gateways, mobile units, videoconferencing recording and streaming equipment);

- The expansion of current videoconferencing capacity within their jurisdictions (e.g., one jurisdiction is using an action research grant to support the expansion of the videoconferencing project to a third school);
- Further uses of videoconferencing to support special needs students (e.g., consultations with specialists); and
- The hiring of jurisdictional personnel to support videoconferencing (e.g., hiring a jurisdictional videoconference technical specialist).

Communicate with Stakeholders

Several jurisdictions have committed to promoting the benefits of videoconferencing and to ensuring that their stakeholders receive ongoing communications about videoconferencing activities and the findings of their participation in this project. For example:

- St. Albert Protestant Schools is developing a CDROM videoconferencing resource package;
- Technology Integration Facilitators in the Black Gold Regional Division are routinely informing teachers of upcoming videoconferencing opportunities within and beyond the jurisdiction; and
- Edmonton Public Schools is using several means to disseminate information, including the Principal's Advisory Council, e-mail distribution lists, the T4L monthly newsletter, District Technology Staff Bulletin, Superintendent Memo, and the Compass online newsletter.

Strengthen and Explore Partnerships

Several jurisdictions are taking steps to sustain existing and engage new partners in their videoconferencing efforts. For example:

- Parkland School Division is partnering with 2Learn.ca Education Society;
- Golden Hills School Division is partnering with Royal Tyrrell Museum;
- Black Gold Regional Division is partnering with the Edmonton Regional Learning Consortium;
- Aspen View Regional Division is partnering with NAIT, Portage College, and the University of Calgary;
- Livingstone Range School Division is partnering with the Canadian Space Agency, Royal Tyrell Museum and the University of Lethbridge Faculty of Education;
- Parkland School Division is in discussions with Capital Health to provide speech language pathology services; and
- Sturgeon School Division is partnering with the Edmonton Garrison.

Expand Videoconference-enhanced Courses

As discussed earlier, several courses are continuing to be offered via videoconferencing, and new courses are under development. The reported commitment of most small rural

jurisdictions is to offer their students greater program choice and move towards more online/videoconference delivery.

Support Various Users of Videoconference Suites

Jurisdictions reported a range of plans to continue to support the use of videoconferencing by various user groups including:

- PLCs;
- Teachers engaged in professional development and related follow-up sessions;
- Teachers engaged in inter-school collaboration, mentorship and coaching;
- Administrators taking part in virtual school visits;
- Students engaged in a variety of learning experiences (e.g., peer-to-peer collaborations, consultations with specialists, videoconference projects); and
- Various administrative and maintenance department staff (e.g., meetings).

These plans involve:

- Hiring jurisdictional consultants, learning technologies coordinators, network analysts, and/or technicians;
- Providing centralized and site-based technical support (e.g., supporting mobile units, developing networks, centrally managing devices, providing adequate bandwidth, providing technical training to school-based staff);
- Providing job-embedded professional development sessions and opportunities to attend summer institutes, masters programs, and other professional development events;
- Expanding videoconferencing capacity by acquiring additional suites and supporting technologies;
- Tying videoconferencing to jurisdictional and school-based educational goals and/or Alberta Initiative for School Improvement (AISI) projects; and
- Finding experts and mentors willing to support teachers and schools. For example, one jurisdiction will be identifying core subject area specialists within the jurisdiction who will meet via videoconference to discuss curriculum and instructional issues, develop recommendations for improvement, and provide face-to-face and/or videoconference coaching services to classrooms.

Appendix A: Detailed Jurisdictional Summaries by Theme

1. Exploring Learning Environments that Employ Videoconferencing

Aspen View Regional Division No. 19, Battle River School Division No. 31, and Wolf Creek School Division No. 72 addressed "exploring learning environments that employ videoconferencing" as their primary theme.

Each jurisdiction reported the following impacts and benefits, attainment of goals and deliverables, recommendations, and plans for sustainability for this primary theme.

Impacts and Benefits

Aspen View Regional Division reported the following impacts and benefits:

- This project has demonstrated that French as a Second Language (FSL 7/8) classes can be successfully delivered via videoconferencing. It was noted that in general, the academic achievement (as measured using the same or similar assessment tools) of students at the remote locations was comparable to students who received traditional classroom instruction.
- The successful blending of instructional strategies and technologies (e.g., use of electronic whiteboards, Moodle and Bridgit™ Software, use of site-based tutorials, supervised use of print distance learning materials and French Language software (Rosetta Stone)) has resulted in the expansion of the use of videoconferencing for other courses, including Mathematics 31, Mathematics 30 Applied and Physics 20.

> **Videoconferencing has expanded students' course alternatives and "increased the jurisdiction's ability to facilitate meetings and offer professional development."**
>
> - Aspen View Regional Division

- Schools have added videoconferencing course delivery alternatives to the traditional asynchronous distance education courses available through the Aspen View Virtual School or Alberta Distance learning Center.
- The availability of videoconferencing suites in all schools and the jurisdiction office has increased the ability of the jurisdiction to facilitate meetings (e.g., maintenance meetings, Administrator Association meetings, meetings among staff and trustees)

and offer professional development (e.g., Canadian Space Agency presentations, weekly tutorials from teachers in Aspen View Virtual School).

Battle River School Division reported the following impacts and benefits:

- Videoconferencing allowed students from small high schools to access low enrollment courses (e.g., Mathematics 31) that were not offered locally. It was noted that students successfully completed the Mathematics 31 course offered via videoconferencing with grades ranging from 80 to 97 percent. Course offerings in second languages and science are now being expanded.
- The videoconferencing facilities are being made available to the health region, which uses videoconferencing to work with parent councils; and to community groups, several of which have taken advantage of the opportunity. The Forestburg community is currently participating in a series of four parenting workshops via videoconference from Calgary.

Videoconferencing has:

- **Enabled students to access low enrollment courses;**
- **Enhanced the jurisdiction's one-to-one laptop project;**
- **Advantaged parent councils and community groups; and**
- **Enabled the provision of special education supports.**

- Aspen View Regional Division

- The jurisdiction's one-to-one laptop project will be enhanced through the use of videoconferencing for collaborative planning and professional development.
- Videoconferencing is being used to provide specialized training and support to staff involved in special education.
- Two or three additional electronic whiteboards have been ordered in those schools where they were be used as part of the videoconferencing suites. Associated professional development has been successful.

Wolf Creek Public Schools

Wolf Creek School Division reported the following impacts and benefits:

- Students are able to access a broader range of high-quality videoconference-delivered classes. Also, teachers are experienced subject-area specialists and are able to effectively blend asynchronous technologies.
- A new level of cooperation and coordination has emerged between the jurisdiction's high schools. Specifically, high school timetables have been revised to best meet student needs, and the funding model was unanimously adopted.

- Videoconferencing is being accepted as a viable technology to support administrator mentorship, new teacher mentorship, and higher levels of professional collaboration.

"On a spectrum from most desirable (face-to-face) to least desirable (paper-based distance learning), videoconference course delivery blended with asynchronous support technologies has given our students an alternative high-quality course delivery option that moves the "quality index" towards the face-to-face end of the spectrum."

- Wolf Creek Public Schools

Attained Goals and Deliverables

Aspen View Regional Division reported having attained the following goals and deliverables:

- Videoconferencing suites have been installed in all 13 schools and the jurisdiction office, and these suites are seeing occasional use. A number of suites are used weekly for virtual school tutorials, meetings, and professional development. The Aspen View Virtual School uses the suites extensively, blending technologies, formats, instructional strategies, and learning environments in the process.
- French as a Second Language (FSL) is being successfully delivered via videoconferencing, providing an alternative to traditional classroom instruction.
- Electronic whiteboards and Bridgit™ software are being used in all of the virtual school classrooms. Many electronic whiteboards have now been installed in classrooms throughout the jurisdiction. For example, Edwin Parr Composite School has electronic whiteboards in 8 of its 21 classrooms.
- The implementation and ongoing support of instructional technologies in the jurisdiction has been enhanced through this project. For example, a presentation by the Canadian Space Agency demonstrated the value of bringing experts into the classroom via videoconferencing.
- The jurisdiction has hired a part-time Knowledge and Employability/Registered Apprenticeship Program coordinator and a part-time career counselor who will use videoconferencing to bring career counseling information and services to students across the school jurisdiction (e.g., videoconferencing sessions highlighting NAIT programs have been planned).

Battle River School Division reported having attained the following goals and deliverables:

- A review of the 2006/2007 offering of Mathematics 31 via videoconference is currently underway and the course is being offered again this year with several enhancements.
- Physics 30 will be offered to small high schools via videoconferencing in the second semester of the 2007/2008 school year.

Wolf Creek School Division reported having attained the following goals and deliverables:

- The 2006/2007 school year saw five courses (Physics 20, Physics 30, Mathematics 31a, Mathematics 31b, and French 13) offered in all six jurisdictional high schools via point-to-point or multi-point videoconferencing, thereby providing students with an alternative to paper-based correspondence courses. Four teachers and 89 students were involved.
- A centralized support strategy was established as follows:
    - The Technology Integration Coordinator provided technical/instructional support and identified participating teachers and coordinated timetables.
    - Technical issues that disrupted learning and instruction were given the highest priority and immediate attention.
    - A standard room set-up was established that included a large monitor/screen at the back of the room, a telephone (only in some locations)[11], and use of the presentation mode in the multi-point sites.
- Ongoing assessment and evaluation using attitude surveys, observations and conversations took place. Assessment revealed that:
    - 64% of students found the videoconference delivery close to, as good as, or better than their traditional classroom experience. If given a choice to take the paper-based correspondence or videoconference course, or not take the course, 85.7% of students would take the course by videoconference, especially if the course was a prerequisite for post-secondary education.
    - 75% of parents rated their child's overall experience with videoconference course delivery as either positive or neutral. It was noted that parents found videoconference course delivery as an acceptable alternative to traditional classroom instruction.
    - Teachers recognized the challenges and differences of teaching using videoconferencing and adapted quickly to the environment. Teachers stressed the importance of identifying the essential learning outcomes and planning accordingly, and the need to ensure all students at remote and delivery sites are actively engaged.

[11] Wolf Creek Public Schools is currently deploying a district wide VoIP telephone system that will see a VoIP telephone in every classroom including videoconference classrooms.

- Administrators recognized the advantages of videoconference over paper-based correspondence courses, which specifically included scheduled synchronous class time and support and direct instruction/facilitation by a teacher. Administrators observed these advantages especially in small high schools where local expertise was not available, where the need for centralized coordination and pedagogical and operational support is more necessary. It was noted that administrators "affirmed that technical support was immediate and effective" and were largely willing to adjust bell schedules and timetables in the best interests of students.
- Effective videoconference-enhanced learning environments require the following technologies, in order of priority:
  1. Good audio communication;
  2. Real-time data sharing using Bridgit™ software, electronic whiteboard, and supporting software tools;
  3. Video; and
  4. Asynchronous tools such as FirstClass Ed, e-mail and other supporting technologies.

Recommendations and Plans for Sustainability

Aspen View Regional Division made the following recommendations based on their experience:

- Centrally coordinate videoconferencing projects/initiatives to ensure successful implementation (i.e., funding, timetabling, access to technical support).
- Provide adequate and ongoing technical and pedagogical training/in-servicing.
- Develop a small pilot project to work out the technical kinks and form a local cohort of technical and pedagogical experts.
- Provide sufficient time and financial resources for technical support to minimize technical problems during videoconferences.
- Build a critical mass of users by going slow, implementing the technology in stages, and demonstrating its value to schools and the community.
- Model the use of this technology (e.g., jurisdiction office and school based administrators must model the use of videoconferencing for meetings and professional development; publicize videoconference events involving outside agencies within the school community).

Aspen View Regional Division reported the following plans for sustainability:

- The Board of Trustees presented a videoconferencing policy in November 2007.

- Mathematics 31 will be offered via videoconference in the second semester, bringing together 19 students from Edwin Parr Composite School (hosting school) and Boyle School.
- Mathematics 30 Applied and Physics 20 students participate in weekly tutorials with their teachers via videoconferencing.
- Maintenance department staff and the Aspen View Administrators Association will continue to use the videoconference suites for meetings.
- Aspen View is currently researching and has allocated funds for an MCU, which is anticipated to be installed in Summer 2008. Combination scanner/printer/fax machines are being installed with every suite.
- Increasing program availability through videoconferencing has been identified in the jurisdiction's three-year plan.
- A partnership with NAIT for distance delivery of NAIT "tours" has been brokered and will begin in February 2008.
- The Aspen View Regional Division and Portage College have entered into an agreement that will result in the offering of an Educational Assistant Certification Program via videoconferencing commencing in January 2008.
- The Aspen View Regional Division and the University of Calgary are in negotiations for a Graduate Program in Inclusive Education offered to interested jurisdictional employees via videoconferencing.

Battle River School Division made the following recommendation:

- Online learning management systems have been found to be a beneficial tool for course delivery, uploading of student work, and sending/receiving assignments. Therefore, the jurisdiction is recommending that all schools have e-mail accounts and access to online learning management systems as well as writing tablets and 'smart notebook' software.

Battle River School Division reported the following plans for sustainability:

- Mathematics 31 and Physics 30 are currently being offered to four schools via videoconference. Two schools have rearranged timetables and are planning to "team teach" some Mathematics 30 topics. Collaboration in the areas of Social Studies and English is also occurring among the jurisdiction's three one-to-one laptop schools. Although videoconferencing is viewed as beneficial to second language programs, French is only being considered for future development at this time.
- The Director of Curriculum is discussing the possibility of linking schools in the jurisdiction to discuss peer assessment.
- Some schools are offering parenting and other courses of interest to various parent groups via videoconference.

- A permanent half-time staff member has been hired to provide videoconference training and support services.
- An additional videoconferencing suite was installed at Rosalind School to facilitate collaborations between teachers at Bawlf School and Rosalind School.
- From January to April 2008, the University of Alberta Augustana Campus is using the jurisdiction's videoconferencing suite to offer a twice-weekly French pronunciation course with an instructor from Faculté Saint-Jean. The jurisdiction expressed hope that this partnership could continue.

Wolf Creek Public Schools

Wolf Creek School Division made the following recommendations based on its experience:

- Strive for the highest ratio of synchronous versus asynchronous instructional time as possible in the learning environment. Allowing for flexibility in schedules, especially for class start and end times around the lunch hour, can help to maximize synchronous instruction time.
- Establish a strategy and protocols to achieve the best possible audio. Minimize ambient noise and consider implementing a wireless microphone where students are having difficulty hearing.
- Establish a strategy to enable and ensure that teachers and their remote students communicate with each other.
- Provide sufficient professional development and additional preparation time, if possible, to videoconference teachers.
- Teachers should have experience with the course material and/or integration of technology as well as be willing to teach using videoconferencing.
- Assign a "go to" person at each remote site to respond to questions or concerns by teachers or students.
- Balance student numbers at remote and delivery sites, if possible, or ensure smaller total class sizes. "Piggybacking" students onto an existing class is not recommended.
- Technical support must be prioritized to ensure issues are addressed in a timely manner.
- Be sensitive to the fact that videoconference-based course delivery may not be the best solution for all students. A degree of independence and motivation is required, although there is evidence that a well-planned and delivered videoconference course supported by various instructional technologies is an effective mode of course delivery.

Wolf Creek School Division reported the following plans for sustainability:

- Continue to use videoconferencing for mentorship, professional development, consultation and course enhancement. It was noted that this commitment aligns with

the jurisdiction's goal to create a culture of live collaboration by using technologies including VoIP, conferencing software, electronic whiteboards, collaborative document development and management, and videoconferencing.

- Continue to employ a central support model for videoconference course delivery that involves:
    - A Technology Integration Coordinator who provides teachers and students with technical/instructional support as well as timetable coordination for videoconference-based courses;
    - Continued technical support will be provided by the Technology Services Department; and
    - The locally developed funding model whereby schools (delivery and remote) retain 30% of the CEUs for each registered student, with the remaining 70% used centrally for teachers and other professional supports. Schools providing the teacher for a videoconference-based course will be paid 1/40 of the average teacher cost per CEU for providing this service. It was noted that this model is insufficient to fully sustain videoconference-based course delivery and more funds will be required. On-going funding support will be reconsidered as part of a district ad hoc task force examining all aspects of Wolf Creek's delivery of services. The continued implementation of videoconference-based course delivery will be based on the understanding that the majority of students would prefer to take a videoconference delivered course over paper-based correspondence, not necessarily because it is a cost-saving course delivery strategy.

2. Supporting Professional Learning Communities

Black Gold Regional Division No. 18, Canadian Rockies Regional Division No. 12, Edmonton Public Schools No. 7, Foothills School Division No. 38, Livingstone Range School Division No. 68, Northern Lights School Division No. 69, Parkland School Division No. 70, Pembina Hills Regional Division No. 7, and Sturgeon School Division No. 24 addressed "supporting professional learning communities" as their primary theme.

Each jurisdiction reported the following impacts and benefits, attained goals and deliverables, and plans for sustainability.

Impacts and Benefits

Black Gold Regional Division reported the following impacts and benefits:

- Teachers and administrators are becoming comfortable with and are able to see the benefits of videoconferencing. Early adopters are using videoconferencing more frequently. Several teachers who have similar assignments are using videoconferencing to collaborate across the jurisdiction, resulting in more successful implementation of teaching strategies.

> **"This initiative has enabled us to extend our reach in working with teachers and facilitating teachers working together...[and has become] the basis for a strong collaborative professional development environment [unrestricted] by time and distance."**
>
> - Black Gold Regional Division

- Teachers and administrators are using videoconferencing for:
  - Instructional planning and reflective discussions on teaching strategies;
  - Professional development and just-in-time support (e.g., an AISI Jurisdiction Lead Teacher logged 105 videoconference contacts and follow-ups with School Lead Teachers and school staff; Technology Integration Facilitators used a scaffolding strategy that allowed teachers to engage their students in collaborative videoconferencing projects, while learning best practices of videoconferencing);
  - Leadership team meetings resulting in timely and advantageous program adjustments (e.g., the Enhancing Instructional Leadership program was able to partner with Edmonton Regional Learning Consortium to participate in BC's Interactive Innovations conference via live video).
- 92% percent of teachers agreed or strongly agreed that they have seen "evidence in student work that the strategies discussed during videoconferencing have made a difference to student learning." The jurisdiction reported that students directly

benefited from the projects designed or facilitated by the Technology Integration Facilitators in collaboration with teachers.

CANADIAN ROCKIES Public Schools

Canadian Rockies Regional Division reported the following impacts and benefits:

- Individual teachers, school administrators and school jurisdiction personnel have become aware of the potential of videoconferencing as an effective method for connecting teachers between schools and as a mentorship tool.
- Participants have not only learned how to use the technology, but through action research and discussions, they have improved their shared understanding, teaching practice, and instructional design in the area of phonemic awareness. Assessment is also more consistent across the district and students are receiving targeted interventions.
- Surveyed teachers indicated that they had grown professionally, felt supported, felt that their participation in the PLC contributed to student learning, and would participate in a videoconferencing PLC in the future.
- Anecdotally, teachers reported that they felt more confident reporting student progress/needs to parents as well as appropriately targeting supports, and noticed improvements in communication with parents regarding information about the reading process and the importance of phonemic awareness. It was noted that the test scores of students who received targeted interventions at the two participating schools (Elizabeth Rummel School and Banff Elementary School) improved significantly.

Participants have not only learned how to use the technology, but through action research and discussions, they have improved their shared understanding, teaching practice, and instructional design in the area of phonemic awareness.

- Canadian Rockies Regional Division

EDMONTON PUBLIC SCHOOLS

Edmonton Public Schools reported the following impacts and benefits:

- Twenty-two schools used videoconferencing to connect classrooms to each other and their community, providing opportunities for authentic learning and collaboration among students. Approximately 170 teachers and their students participated in a variety of videoconference-based projects.
- Educators effectively used videoconferencing in new and existing PLCs in 11 schools to share instructional strategies, implement curriculum and lesson plans, and collaboratively examine student work. An online Community of Practice involving teachers, administrators, technicians and community members was also established

(see http://www.communityzero.com/epsb_vc, using epsb_vc as the community alias). Although success varied among individuals, this project has helped teachers:

- Enhance job-embedded professional learning and collaboration;
- Engage students in authentic learning experiences that are positively impacting achievement results; and
- Expand and promote the use of videoconferencing within the jurisdiction.

- Survey results indicated that all participating teachers were motivated through the use of videoconferencing and related technologies to become engaged in a PLC. Teachers described many ways in which they felt supported by videoconferencing. Videoconferencing helped teachers enhance their practice through:
  - Pedagogical collaborations and reflective dialogue with colleagues;
  - The sharing of expertise;
  - Common policy development;
  - The development and sharing of curriculum-based projects (e.g., mathematics, second languages, language arts); and
  - The sharing of student progress reports.

> **"Teachers have increased their understanding, confidence and appreciation of videoconferencing technology. Students were thrilled with the technology, were highly motivated and would like to continue their learning with this technology."**
>
> - Edmonton Public Schools

- Students also realized benefits as evidenced by their survey responses and those of their teachers. The majority of students appreciated the videoconferencing events as positive learning and technical experiences and would like to participate in this way again. According to teachers, student achievement was enhanced through the use of videoconferencing and collaboration tools. This enhanced achievement was believed to be due to increased student motivation and excitement created through interaction and sharing with peers and experts, by the multi-modal, hands-on nature of the technology, and by the authenticity of the learning experience.

Foothills

Foothills School Division reported the following impacts and benefits:

- Overall, participation in this project resulted in an appreciation of the "possibilities for teacher and student collaboration and interaction" as well as the cost-effective way in which "networking and collaboration between schools and teachers within the district" can happen.
- All five participating school teams, which included an administrator, lead teachers, and a learning coach, co-designed and successfully implemented three interactive collaborative videoconference projects with students from Grades 2, 2/3, 10, 11, and 12. The impact on student learning was evidenced by the quality of their work, their

dedication to completion, their confidence level, and the responsibility they took for their own learning.

- The comfort level with videoconferencing technology greatly improved as lead technology contacts, onsite technology facilitators, teachers, administrators and students worked together as learning teams/communities.
- Ongoing PLC meetings via videoconferencing allowed teachers to share, plan, create and assess their learning and deepen their curricular understandings including cross-disciplinary connections. PLCs established a list of descriptors to identify and guide their understandings of interactive and collaborative videoconferencing.

"Videoconferencing has the capability to make the world smaller enabling you to get outside of the classroom walls to create real-world learning."

- Foothills School Division

Livingstone Range School Division reported the following impacts and benefits:

- Many administrators and staff members engaged in videoconferencing sessions within and beyond the jurisdiction (e.g., between jurisdictional schools, and with the University of Lethbridge and the Canadian Space Agency) that illustrated the benefits of providing students with opportunities to interact with subject-matter experts at a distance.
- The videoconferencing team and technical support staff have created a culture of support for the successful use of videoconferencing within the jurisdiction. Efforts are now focused on making more effective use of this medium to enhance classroom learning experiences.
- Satisfaction surveys revealed that administrators and trustees appreciated the benefits of videoconferencing in terms of saving time and reducing travel and would be willing to continue to meet in this way.
- Videoconferencing allowed staff at various school sites to participate in activities or events (e.g., guest speakers) that they would not otherwise have been able to attend.

The jurisdiction's special needs student population benefited from programming consultations via videoconferencing with professionals from outside of the jurisdiction; consultations that would otherwise have been hindered by high costs and/or time constraints, or the limitations of telephone-based interactions.

- Livingstone Range School Division

- Students have been provided with learning experiences that would otherwise have been impossible or impractical (e.g., Canadian Space Agency, Royal Tyrrell Museum). Observations at these learning events revealed that students were

enthusiastic and interested, were able to appreciate the connections between the real world and the curricular outcomes they were expected to achieve, and found the learning experiences valuable.

- The jurisdiction's special needs student population benefited from programming consultations via videoconferencing with professionals from outside the jurisdiction. These consultations would otherwise have been hindered by high costs and/or time constraints, or the limitations of telephone-based interactions. The jurisdiction noted that this type of use will be further explored as a valuable, sustainable use for videoconferencing.

Northern Lights School Division reported the following impacts and benefits:

- After resolving bandwidth capacity and network reliability issues, videoconferencing was successfully used:
  - For professional development purposes;
  - To facilitate PLC meetings;
  - To offer Mathematics 31 to students in three locations (Bonnyville Centralized High School delivered the course to two rural high schools, Glendon School and Ecole Plamondon); and
  - To provide speech language pathology services to students, thereby reducing wait times and increasing the frequency of service.

"It is a very useful and reliable technology that has had a significantly positive impact on our operations."

Videoconferencing has been successfully used to support professional development, to offer a Mathematics 31 course, and to provide speech language pathology services.

- Northern Lights School Division

- It was noted that administrators are discussing how to provide students with access to a greater variety of programs via videoconferencing in all five high schools in the jurisdiction. Six teachers are currently training for this opportunity.
- The PLC initially focused on the implementation of new mathematics curriculum; however, a project connecting two French immersion teachers/classrooms was also developed.
- The PLC continues to meet, exclusively via videoconferencing, saving the jurisdiction travel costs and time, increasing attendance at meetings, and reducing the need to cancel meetings due to road conditions. The suites are being used daily. A second suite was added to the Bonnyville Division Office boardroom and a new suite will be installed in December 2007 to enhance

French immersion programming between two schools in the jurisdiction (Ecole Plamondon and RA Reynolds School at 4-Wing Cold Lake).

Parkland School Division reported the following impacts and benefits:

- Jurisdictional videoconferencing capacity increased. Eight schools and the central office are equipped with videoconferencing units, and improved scheduling and tracking supports are provided through Microsoft Outlook.
- Educational goals related to the implementation of the new Grade 3 Social Studies curriculum and the further development of inquiry-based learning were facilitated through real-time access to content experts (e.g., UN staff, foreign aid workers, and cultural representatives). Project goals can be found at http://www.2learn.ca/ambassador/ambassadorbg.html.

> **"Perhaps the single greatest benefit for teachers was the ability to meet weekly in small groups to collaborate in the development and enrichment of their teaching."**
>
> - Parkland School Division

- Increased collaboration among teachers occurred during weekly, brief (30 to 45 minutes), curriculum-focused PLC meetings held via videoconferencing. Participants maintained blogs of their experiences (see http://ambassadorproject.blogspot.com/ and http://ambassadorprojectwest.blogspot.com/.)
- Teachers' understanding and use of inquiry-based teaching and learning strategies were enhanced, resulting in student-led learning and discovery in the project's classrooms.
- Students benefited personally, academically, and socially through interaction with peers across the jurisdiction, and by exposure to authentic, relevant experiences beyond the classroom. Student journal entries indicated that they enjoyed presenting what they learned to other schools and valued the contact with subject-matter experts.

> **Students benefited personally, academically, and socially through interaction with peers across the jurisdiction and by exposure to authentic, relevant experiences beyond the classroom.**
>
> - Parkland School Division

- The community benefited in two ways:
  - Members of a community organization shared their experiences helping to build a school in a Central American country. Students benefited in terms of an increased understanding of the needs in developing countries.

- The broader community benefited through a partnership with 2Learn.ca Education Society that produced an online best practice resource that not only supported inquiry-based learning in Social Studies classrooms but also highlighted the experiences of project participants. (See http://www.2learn.ca/ambassador/. This website won an Association for Supervision and Curriculum Development [ASCD] Innovative Practices Award in June 2007.)

Pembina Hills Regional Division reported the following impacts and benefits:

- Students and teachers have engaged in several learning experiences via videoconferencing that have connected them with their peers across Alberta as well as in large, urban American and European cities. For example, the July 2006 Smithsonian Folklife Festival; interaction with Edmonton media personalities Marty Chan and Josh Classen, and Toronto-area Member of Parliament Carolyn Bennett; participation 'Read Around The Planet', 'My Big, Fat, Greek Videoconference', 'Santa From The North Pole', and 'Tech Challenge' videoconference projects; and collaboration on the development of a children's novel, *A Close Shave*.

Our community has been exposed to examples where students are interacting with experts at a distance creating opportunities in rural schools and very small communities that would not have been possible otherwise.

- Pembina Hills Regional Division

- Teachers collaborated and shared their expertise with their peers at a distance.
- The community has been exposed to situations where students interacted with experts at a distance, creating opportunities in rural schools and very small communities that would not have been possible otherwise.
- A permanent district-level position, Coordinator of Learning Technology, has been established to work collaboratively with the existing Director of Technology in the support teachers in the infusion of videoconferencing and associated technologies for learning across the jurisdiction.
- Research-based learning techniques were incorporated into more complex, multi-site, project-based videoconferences (e.g., multiple intelligences and learning modalities).

Sturgeon School Division reported the following impacts and benefits:

- Staff and student awareness of and excitement about the benefits of videoconferencing have been enhanced. Specifically, videoconferencing was seen to be beneficial as a teaching/learning tool within the classroom, as a means to infuse technology into the instructional process, as a provider/facilitator of professional development and professional collaboration opportunities, and as a facilitator of administrative meetings/functions.
- Videoconferencing capacity has increased within the district from two to six sites. Schools participated in videoconferences between schools within the district, as well as with schools outside the district and outside the country.
- Willingness and interest in using videoconferencing as an instructional tool, while still limited, has increased and several schools are beginning to explore opportunities (e.g., the Edmonton Garrison and Guthrie School are discussing the possibility of linking with a school in Afghanistan; two jurisdictional schools are discussing a long-term videoconferencing project focused on reciprocal sharing of student projects and ongoing discussion and debate related to Social Studies topics; one school used its own funds to acquire a dedicated videoconferencing facility; another school borrowed a mobile unit to engage in a specific project).

Willingness and interest in using videoconferencing as an instructional tool, while still limited, has increased and several schools are beginning to explore opportunities.

- Sturgeon School Division

- Ad hoc committee presentations to the Administrator's Council, presentations by and dialogue with central office staff at school staff meetings, and virtual school visits with school administrators by the Superintendent were made possible via videoconferencing.
- The jurisdictional videoconferencing PLC met regularly using videoconferencing, particularly when the meetings were of short duration. Videoconferencing meetings were also held with other jurisdictions to carry out administrative functions.
- Professional development sessions related to character education and "21 Keys of High Performance" were delivered to one remote school from the central office.

Attained Goals and Deliverables

Black Gold Regional Division reported having only recently begun working towards the goals and deliverables outlined in its project plan. The jurisdiction's progress to date is described below.

- Social Studies and French as a Second Language (FSL) lead teachers have yet to use videoconferencing in their classrooms. However, an AISI lead teacher is currently scheduling videoconferencing sessions to develop French immersion teacher teams during the 2007/2008 school year. Social Studies lead teachers also hope to implement videoconferencing strategies this year. On occasion, AISI jurisdiction lead teachers have used videoconferencing to work with new teachers or to provide support to each other in the implementation of AISI projects.
- The most extensive use of videoconferencing was to facilitate meetings focused on videoconference project design and evaluation as well as implementation.
- One professional development meeting with Edmonton Regional Learning Consortium (ERLC) was held via videoconferencing. It is anticipated that meetings with ERLC will be more frequent once it acquires its own videoconferencing suite.
- The sharing of professional development activities using Read and Write Gold with Grande Yellowhead Regional Division was delayed due to software availability issues. However, internal jurisdictional follow-up in-services took place via videoconference.
- Videoconferencing continues to be promoted within the jurisdiction to increase the level of teacher comfort with the technology. For example, a Monster Match Project involving 23 elementary classes is underway to improve students' descriptive writing skills and provide professional development activities for teachers new to videoconferencing.

CANADIAN ROCKIES
Public Schools

Canadian Rockies Regional Division reported having attained the outcomes associated with its goals (i.e., **Goal 1**: to advance professional learning communities using videoconferencing; **Goal 2:** to implement and support Kindergarten-specific phonemic awareness/early intervention programs in Banff Elementary School and L'Ecole Elizabeth Rummel; and **Goal 3**: to support staff in developing the necessary skills to use technology as a bridge mechanism between communities). For example, teachers from Banff Elementary School and L'Ecole Elizabeth Rummel:

- Shared student data and resources to guide decision-making;
- Developed and implemented best practices including common assessments, benchmarks and lesson plans; and
- Discussed new ways of thinking.

Participating teachers are now comfortable with, and appreciate the benefits of, videoconferencing. Exshaw School has been invited to join the PLC next year. Eleven half-days of common PLC time have been embedded in the jurisdiction's operational days, three of which will be dedicated to cross-jurisdictional or lateral professional development.

EDMONTON PUBLIC SCHOOLS

Edmonton Public Schools reported having attained goals and deliverables in four areas:

- Professional Learning Communities. A variety of effective PLCs were established as described below.
  - The PLC among Dan Knott, Parkview and Rosslyn schools is collaborating in the implementation of the Pre-Advanced Placement program.
  - The PLC involving Northmount and George H. Luck schools is collaborating on the implementation of Social Studies and Language Arts.
  - Parkview and McKernan schools developed collaborative groups based on subject areas as part of their Instructional Focus work.
  - A study group at W.P. Wagner School is collaborating and promoting the use of videoconferencing in the school through a number of curriculum-based videoconferences.
  - The PLC between Delwood and Holyrood schools is collaborating on the implementation of their Ukrainian International Bilingual Program.
  - J.D. Bracco School worked with John Mighton, junior high math coach, and mathematicians from the University of Waterloo to prepare students from several schools for national math contests.
  - With support from the Communication Research Centre (CRC/NRC) virtual classroom program and the Canadian Space Agency, Sherwood School led collaborative Language Arts, Social Studies and Science projects with classes from Northmount School, as well as schools in St. Paul, Alberta and Ontario. The CRC/NRC also supported the Alberta School for the Deaf in its collaborations with other deaf institutions.
  - A PLC among Meyokumin, Jackson Height and Tipaskan schools, and later Crawford Plain School, developed collaborative groups based on various subject areas.
  - Teachers and students at Queen Elizabeth School collaborated with the CRN/NRC, Ursula Franklin School in Ontario, and Colonel By Secondary and Holy Heart of Mary Secondary schools in Newfoundland.

- Edmonton Public Schools Leadership Team/Student Achievement created a PLC that is continuing its work with Dennis Sparks, Executive Director of the National Staff Development Council (NSDC).

- Technical Implementation
  - EPSB successfully installed and managed the videoconferencing equipment in each of the participating schools. A management suite was purchased and allowed devices to be centrally managed, including upgrades and firmware version checks. A global address book, and usage reports and statistics were generated, and a simple dialing system was implemented.
  - A mobile videoconferencing unit was purchased and used for by seven schools in the jurisdiction for approximately one month each. Two of the schools have since purchased their own equipment and several others have planned purchases in the near future.
- Community of Practice and Professional Development
  - As mentioned earlier, an online Community of Practice was established. Interactive communication tools, a calendar of events, evaluation tools and discussion boards were used to develop and sustain this collegial online learning community.
  - A variety of professional development events, services and supports were provided by Consulting Services and District Technology staff. An AISI module that included four professional development days and 3.5 hours of follow-up coaching sessions were offered. More than 60 district staff members participated in the Broadband Summer Institutes (2005-2007).
  - Several surveys and online questionnaires were used to assess the project. Results were posted on the community site and shared with staff.
- Information Dissemination
  - National or regional content was accessed by students via videoconferencing from providers, including the Communication Research Centre (CRC/NRC), the Canadian Space Agency, NASA, the Museum of Tolerance in Los Angeles, the Royal Tyrrell Museum, the University of Waterloo, the Ontario Science Centre, the National Art Centre, The Mariners Museum in Virginia, the Cincinnati Science Centre, and the Royal Botanical Garden.
  - Knowledge gained during this project has been shared with the broader community via the online videoconferencing community website (http://www.communityzero.com/epsb_vc); the Principal's Advisory Council; demonstrations to principals and teachers; via e-mail distribution lists; the T4L – Monthly newsletter; the District Technology Staff Bulletin; the Superintendent Memo; the Compass online newsletter; the District Technology Fair and other information sessions; presentations to district staff and parent councils; the Summer Institute; Leadership Link sessions; school open houses; conferences (e.g., ATA Leadership in Learning Conference, Grand Yellowhead Symposium, Videoconferencing Community of Practice, Teacher Convention).

Foothills School Division reported having attained the following goals and deliverables:

- Functioning and successful PLCs were created with collaboration within and between school jurisdictions, including teacher-to-teacher, school-to-school, teacher-to-student and student-to-student collaborations;
- Interactive videoconferencing projects were designed, implemented and assessed;
- Students became more accountable for their learning and considered the learning experience to be more real and authentic; and
- Three fixed and three mobile videoconferencing suites were established.

Livingstone Range School Division reported having attained the following goals and deliverables:

- Equipment, infrastructure and technical support were put into place in order to allow for reliable and well-supported point-to-point and multi-point connections both within and beyond the district.
- Supporting documentation and processes for booking, initiating and running a videoconference meeting/session/event were developed.
- Groups of administrators and teachers were encouraged to use videoconferencing to facilitate meetings and professional development sessions. Fourteen videoconference events have been hosted within the district.
- F.P. Walshe School in Fort MacLeod is participated in a videoconference-based French 10 course. It is hoped that this course will serve as an exemplar for other schools.
- Administrators and staff participated in videoconference sessions offered by technical support staff, the University of Lethbridge, Faculty of Education and the Curriculum Re-Development Centre, and High Prairie School Division. Sessions focused on use of videoconferencing equipment and electronic whiteboards. The University of Lethbridge also held bi-weekly videoconferencing sessions during Fall 2006 to provide support to its Professional Semester III students.
- Two videoconferences offered through the Canadian Space Agency provided concrete examples of good pedagogy and practice in the use of classroom-based videoconferences.

Northern Lights School Division reported having attained the following goals and deliverables:

- PLCs routinely meet via videoconferencing, thereby reducing travel time and distance within the jurisdiction. Based on collaboration with their peers and consultants within the jurisdiction, teachers are implementing strategies that meet the learning needs of all students.

Parkland School Division reported having attained the following goals and deliverables:

- The outcomes associated with **Goal 1**, teachers and students learning about and practice the inquiry skills identified in *Focus on Inquiry: A Teacher's Guide to Implementing Inquiry-based Learning* [2005], were satisfactorily achieved. However, difficulties in finding videoconferencing sites in the studied countries limited the number of global contacts students made.
- The outcomes associated with **Goal 2**, students exploring other cultures and communities to examine shared values and their own sense of belonging, beliefs, traditions, and languages, were partially achieved, as measured using various assessment methods. Full attainment of these outcomes was limited by difficulties making connections with students and schools in the studied countries and varying levels of technology expertise and access to hardware within the project schools.
- The outcomes associated with **Goal 3**, participants adding to the body of research concerning the use of videoconferencing as a support for the development of PLCs, were largely achieved. It was clear that the model developed during this project to support and strengthen PLCs through the use of videoconferencing was successful, and could be expanded to other schools sites and subject areas. However, more work needs to be done to explore instructional uses of videoconferencing.

Pembina Hills Regional Division reported having attained goals and deliverables as detailed in the tables below. Overall, its results can be briefly summarized as follows:

- Several videoconference events took place including one-on-one, group and district professional development collaborations; meetings and workshops; AISI administrator meetings; and learning events involving interaction between students and various experts.
- Several student projects were submitted by four schools as part of the 'Tech Challenge' (see http://www.phrd.ab.ca/edtech/main/challenge.htm).
- The infusion of technology into learning has been incorporated into all schools' plans and the creation of the Learning Technologies Coordinator position has been incorporated in the jurisdictional education plan for 2007-2010.

- The majority of students and teachers have been surveyed using the jurisdictional satisfaction survey (see http://www.phrd.ab.ca/results/surveys.html). It was noted that the 2006/2007 results were not available at the time of this report.
- A Grade 9 French Immersion course was taught by two teachers based at RF Staples School in Westlock and involved students at Barrhead Composite School.
- The Director of Instructional Services has established a Social Studies implementation PLC as well as a timetable for videoconference sessions.
- The Deputy Superintendent met with student teachers at Concordia University College via videoconferencing to attract teachers to the jurisdiction.
- Upcoming projects involving videoconferencing include a three-year inclusion project with the University of Alberta, and a mental health project involving the jurisdiction, Aspen Health and the town of Swan Hills.

Table 1: Pembina Hills' Year One Events/Milestones

Event / Milestone	Target Achievement	Target Date	Responsibility
a) Ed Tech Lead Teacher collaboration with teachers	125 collaborative interactions	Sep. 2005 - June. 2006	Ed Tech Lead Teacher and site-based Ed Tech Leaders
b) Completion of School Ed Tech Plans	10 out of 16 school Ed Tech plans	Jan. 2006	Site-based Ed Tech Leaders
c) Ed Tech Surveys (confidence with ICT's and technology)	Students – 65% Teachers – 75%	May. 2006	Ed Tech Lead Teacher and Administrators
d) Challenge Project Outcomes	1 project per site (9)	June. 2006	Director of Student Services and School
e) Multiple collaborations via videoconferencing (1 per school)	16 collaborative VC events	June. 2006	Ed Tech Lead Teacher and site-based Ed Tech Leaders
f) Videoconference events to support curriculum implementation	5 VC events	June. 2006	Director of Instructional Services
g) Delivery of Rehab Service via videoconference	Delivery to 4 sites	Sep. 2005 - June. 2006	Director of Student Services and School Administrators
h) Videoconference events to support school improvement initiatives associated with PHRD Hulley initiative	4 VC events	Sep. 2005 - June. 2006	School Administrators and Learning and Leading project leaders

Table 2: Pembina Hills' Year Two Events/Milestones

Event / Milestone	Target Achievement	Target Date	Responsibility
a) Ed Tech Lead Teacher collaboration with teachers	140 collaborative interactions	Sep. 2006 - June. 2007	Ed Tech Lead Teacher and site-based Ed Tech Leaders
b) Completion of School Ed Tech Plans	16 out of 16 school Ed Tech plans	Nov. 2006	Site-based Ed Tech Leaders
c) Ed Tech Surveys	Students – 70% Teachers – 80%	May. 2007	Ed Tech Lead Teacher and Administrators
d) Challenge Project Outcomes	2 projects per site (18)	June. 2007	Director of Student Services and School
e) Multiple collaborations via videoconferencing (3 per school)	48 collaborative VC events	June. 2007	Ed Tech Lead Teacher and site-based Ed Tech Leaders
f) Videoconference events to support curriculum implementation	10 VC events	Sep. 2006 - June. 2007	Director of Instructional Services
g) Delivery of Rehab Service via videoconference	Delivery to 6 sites	Sep. 2006 - June. 2007	Director of Student Services and School Administrators
h) Videoconference events to support school improvement initiatives associated with PHRD Hulley initiative	10 VC events	Sep. 2006 - June. 2007	School Administrators and Learning and Leading project leaders

Sturgeon School Division reported having attained the following goals and deliverables:

- Although opportunities for teachers to collaborate via videoconferencing on the implementation of the new Social Studies curriculum and on improving student achievement in junior high math were available, teachers preferred face-to-face meetings and few videoconferences were held. It was noted that travel distances were not an issue for these teachers.
- Although still limited, the number of teachers and schools interested in videoconferencing is increasing. Each school has identified a lead teacher to support the introduction of videoconferencing, and to participate on the district-wide PLC.
- This project resulted in a total of six videoconferencing suites in the jurisdiction. The jurisdiction has subsequently allocated funds to further increase the number of suites to nine. All elementary, junior high and senior high schools now have some videoconferencing capacity within the building.

Recommendations and Plans for Sustainability

Black Gold Regional Division made the following recommendations based on their experience:

- Ensure a group of champions routinely contact teachers via videoconference to discuss pertinent issues, strategies and advantages for classroom use of the technology;
- Distribute agendas and materials for videoconferencing meetings in advance of the meeting; and
- Ensure technical support and testing of outside conference connections to minimize setup problems.

Black Gold Regional Division reported the following plans for sustainability:

- AISI Jurisdiction Lead Teachers have committed to providing teachers with follow-up support via videoconferencing after professional development workshops and seminars;
- Inter-school teacher collaboration teams are meeting in-person and via videoconferencing;
- Teachers are continuing to be in-serviced on the instructional uses of videoconferencing through scaffolding activities as they work with their students; and

- Technology Integration Facilitators are continuing to inform teachers of videoconferencing opportunities within and beyond the jurisdiction.

CANADIAN ROCKIES
Public Schools

Canadian Rockies Regional Division made the following recommendations based on its experience:

- Administrators should continue to promote and support PLCs within the jurisdiction by:
  - Promoting and supporting the use of videoconferencing between schools;
  - Seeking new resources and funding to allow the PLC to continue to work on early literacy;
  - Embedding time for PLCs in the school day; and
  - Extending participation in the PLC (e.g., the Kindergarten teacher and reading teacher from Exshaw School).

Canadian Rockies Regional Division reported the following plans for sustainability:

- A Canadian Rockies Regional Division Action Research Grant has been awarded that will enable the continuation and expansion of the PLC (e.g., inclusion of teachers at Exshaw School; release time for three-way videoconferencing between the schools on three occasions in the school jurisdiction calendar; and the set up of a videoconferencing equipment booking system).

EDMONTON PUBLIC SCHOOLS

Edmonton Public Schools made two sets of recommendations as follows:

- Recommendations for Professional Learning Communities:
  - Ensure videoconference-mediated PLCs receive support from the principal and the leadership team, and have a clear purpose that teachers see as supportive of their teaching and learning;
  - Encourage participants to develop positive, respectful relationships with each other.
  - Before PLC meetings, prepare and distribute agendas and related documents, develop challenging questions that require reflection, and assign a chair. "Learning conversations" require active listening, and interaction and the sharing of ideas tend to increase among smaller groups of teachers. Meetings should showcase all schools' expertise/contributions and result in a plan for follow-up;
  - Promote communication between teachers before, during and after the videoconference sessions. For example, sharing documents (lesson plans, assessment tools, etc.) and other resources via e-mail;
  - Invest in, and encourage the building of, videoconferencing capacity in schools. A videoconference champion is essential in the early stages of a PLC, but as

more teachers become familiar with the technology, it is important to assume different roles in the PLC; and

- Consider the writings by Dr. Ruth Stratton about the different roles in PLCs at different stages (i.e., The Champion; The Architect; The Information Broker; and The Boundary Spanner). A Champion who is visionary, charismatic, and able to communicate big ideas is essential in the early stages of a PLC. The Champion must be supported by other factors to ensure success (e.g., Purpose and Focus, Relationships, Collaboration, Leadership, Accountability and Building Capacity and Support). See *Creating and sustaining effective professional learning communities* (May 2005) at http://www.ncsl.org.uk/research/research_activities/randd-activities-plc.cfm for more information.

- Recommendations for Edmonton Public School Board:
  - Continue to invest in videoconferencing infrastructure equipment by considering the purchase of conferencing software, server and licenses; bridge equipment (MCU); videoconferencing recording and streaming equipment; wall-mounted electronic whiteboards; and People + Content software;
  - Continue to work with Alberta Education on the implementation of the VC scheduler that allows the scheduling of videoconference meetings with other organizations' videoconference sites to ensure that its development offers maximum compatibilities to the jurisdiction's schools;
  - Encourage more schools to purchase videoconferencing equipment by strengthening existing and exploring new relationships with Canadian content providers, such as the Royal Tyrrell Museum, Canadian Space Agency, University of Alberta, Alberta Legislature, Edmonton Valley Zoo, and the Royal Alberta Museum;
  - Continue to disseminate success stories including information about the benefits of, and district services related to, videoconferencing to administration, staff and parent councils;
  - Continue to develop the online videoconferencing group and introduce tools such as wikis and blogs;
  - Continue to provide videoconferencing user training as well as training to technicians. Consider providing professional development workshops to other organizations;
  - Continue to gather information on the type and amount of support required in each school by ensuring network analysts and technicians collaborate in the trouble tracking process; and
  - Evaluate, and be prepared for, the anticipated demand for desktop videoconferencing.

Edmonton Public Schools reported the following plans for sustainability:

A jurisdictional plan was developed that addressed the technical infrastructure requirements as well as ongoing coordination and centralized support roles. A cost recovery model was introduced to schools starting September 2007 and new funding

resources have been explored. Specific details of this plan are outlined in the table below:

Edmonton Public Schools Videoconferencing Sustainability Plans	
Personnel:	
A Videoconferencing Consultant (.8 FTE), Network Analysts and ITS technicians are in place to support teachers, perform troubleshooting and testing functions, and support, monitor and assess videoconferencing activities with a move towards a cost recovery model. This consultant is working closely with all the schools and teachers involved in videoconferencing.	
Network Considerations:	
Support Mobile Units	A head end gateway has been installed to ensure flexibility of videoconferencing using mobile units from different locations in schools.
Provide Access to Various Networks	The jurisdiction has access to the Internet, Netera/CA*Net, Alberta Education and the 3V-VC network using a BGP4 router and the V2IU gatekeeper.
Centrally Manage Devices	Videoconferencing devices are centrally managed using TMS (Tandberg Management Suite).
Ensure Adequate Bandwidth	Network traffic was analyzed and bandwidth adjusted as required. Network QoS was implemented.
Professional Development:	
Promote and Support Professional Learning Communities and Provide Professional Development	Professional development is provided to staff with respect to the characteristics of PLCs and the significance of videoconferencing to support these communities. Project findings are also being shared. Consulting Services and District Technology offer ongoing Professional Development support (e.g., the AISI module includes 4 PD days and 3.5 hour follow-up coaching sessions). Funds have been allocated to build a videoconference room at the Center for Education for professional development activities.
Establish Job- Embedded Professional Development	Job-embedded professional development sessions are being offered (e.g., Dennis Sparks – Leadership; John Mighton - Math; EPSB Consultants – Pre-AP, others being explored).
Attend Summer Institute	Schools are encouraged to send two to three staff members to the Summer Institutes.
Long Range Goals:	
Implement Cost Recovery Model	As per business plan, generate sufficient profit to sustain current and future videoconferencing services though yearly subscriptions or per service charges to schools.
Develop Network	Investigate purchase of recording devices and provide

	video streaming to schools; promote the use of the web-based scheduling component; and explore additional world-wide videoconferencing opportunities.
Expand and Build School Capacity	Add at least three schools per year, at schools' expense, but with central support (consultant, Network, ITS); introduce new schools to videoconferencing using the mobile unit; explore other new funding sources; provide professional development sessions to all participating staff and encourage participation in other district PD activities (e.g., AISI, Technology Fair) so as to move from the one "expert teacher" model to a team model.
Add Supportive Technologies	Explore new learning environments and communication technologies (e.g., data projectors, electronic whiteboards, People + Content, conferencing software, and learning management systems).
Create Mentor Relationships	Seek partners and experts who can support teachers/schools.
Disseminate Knowledge	Continue to share information with the broader community (e.g., Principal's Advisory Council, E-mail distribution lists, T4L – Monthly newsletter, District Technology Staff Bulletin, Superintendent Memo, Compass online newsletter etc.).

Foothills

Foothills School Division made the following recommendations:

- Ensure detailed planning, including backup plans, are in place prior to each videoconference;
- Expect pedagogical and technical learning curves;
- Involve everyone in professional development and videoconferencing experiences (e.g., teachers, administration, learning coaches, technology support, office staff, and district leadership);
- Set aside funds to support the sharing of artifacts created collaboratively through the videoconference;
- Record and share learning moments;
- Ensure that the technology is easy to use and well-supported by technology facilitators, especially during the initial learning;
- Designate a lead technician with videoconferencing expertise and ensure this individual is part of the PLC; and
- Document procedures and processes, and diagram equipment and networks for each site.

Foothills School Division reported plans for sustainability in each of the following four areas:

- Continuation of professional development and expansion of the program to other grades and schools.
  - In each of years two, three and four, four more schools will be brought into the videoconferencing project for a total of 17, including the original five schools. Each school will pay for teacher release time for professional development. Professional development will be a combination of jurisdictionally led activities and mentoring by experienced teachers from each previous year. Jurisdictional funds will cover the purchase of additional mobile units.
  - The project includes an expectation that money will be set aside to support professional development and ongoing updating and purchasing of videoconferencing hardware.
  - Videoconferencing use has been tied to the *Key Concepts for Learning* in the Foothills School Division, and as such, administrators, learning coaches and technology facilitators are active members of each school's videoconferencing PLC and jurisdictional support for professional development is ongoing.
- Development of policies, procedures, and manuals.
  - Videoconferencing has been included as a part of the technology planning cycle.
  - Commitment to the use of videoconferencing equipment is evidenced by the acquisition of videoconferencing suites for every school (i.e., 15 mobile suites and three fixed suites are available for 18 schools).
  - A structure of support is available to all participants, including a process to maintain and move towards collaborative videoconferencing, and the writing of manuals and jurisdictional policies for videoconferencing.
  - Technical support is accessible in a timely manner to increase the transparency of its use.
- Collaboration with new partners.
  - Videoconferencing use is being extended via partnerships with organizations (e.g., Western Financial and Duncan Scott are donating equipment).
  - Connecting teachers at different schools through videoconferencing is helping to ensure that expertise is shared across the jurisdiction.
- Ongoing plans for community involvement and connection with other learning establishments
  - Opportunities for community involvement are continuing to be explored (e.g., videoconferencing suites are accessible to others outside of Foothills School Division).
  - Teachers are being encouraged to engage in other professional development opportunities, including Master's programs and connecting with other teachers across the province.

Livingstone Range School Division made the following recommendations based on its experience:

- Equip every school in the jurisdiction with videoconferencing suites;
- Continue to use videoconferencing to replace some regular face-to-face administrative meetings and thereby reduce windshield time;
- Provide ongoing exposure to, and professional development and technical support for, the use of the technology and continue to promote the benefits of videoconferencing among educators. Ensure that educators also fully understand the limits of the technology so that their expectations are reasonable;
- Strive to overcome timetabling barriers as required to meet local needs in remotes sites; and
- Explore the further use of videoconferencing to support special needs students (e.g., consultations with specialists).

Livingstone Range School Division reported the following plans for sustainability:

- Continue site-based technical support by providing additional training to existing technical people, support staff and/or librarians within the schools;
- Provide support and encouragement from upper administrative and board levels for the continued use of videoconferencing through role modeling, and teacher release time for planning and testing;
- Explore the use of videoconferencing for teacher-to-teacher collaboration by providing teachers with opportunities to observe small groups of teachers, teacher leaders and administrators modeling the effective use of videoconferencing. Ensure school principals and jurisdiction-level staff promote and support for this type of collaboration;
- Maintain the existing relationships with the Canadian Space Agency, Royal Tyrell Museum and the University of Lethbridge Faculty of Education; and
- Maintain and evergreen equipment over the long-term by adjusting current technology budgets to include repair and replacement costs for the endpoint units as well as the assistive technologies used with these suites.

Northern Lights School Division made the following recommendations based on its experiences:

- Alberta Education should:
  - Continue to support school jurisdictions in their efforts to acquire more videoconference suites; and

  - Explore ways to support the development of a library of asynchronous instructional podcasts based on core curriculum outcomes via the LearnAlberta.ca web site (e.g., factoring polynomial equations).
- Teacher training programs should ensure that pre-service teachers are aware of, and understand how best to use, videoconferencing technologies and electronic whiteboards.

Northern Lights School Division reported the following plans for sustainability:

- Two additional videoconference suites and several high-end webcams have been purchased to improve Speech Language Pathology services. An online booking form has been created to ensure the service is available as needed.
- Other educational organizations are being provided with evening access to the videoconferencing suites and a rental/service policy is being developed.
- Using a professional improvement grant, the jurisdiction has partnered with the University of Alberta to deliver a partially-subsidized credit course on Teacher Mentorship to staff members currently mentoring first and second year students.
- The use of videoconferencing has been incorporated into the jurisdiction's AISI project on Instructional Intelligence. Teachers across the jurisdiction are being encouraged to use videoconferencing to establish new PLCs beyond those already underway.
- The jurisdiction has budgeted $100,000 to support a system-wide improvement strategy that will identify up to 50 core subject area specialists, who will:
  - Meet via videoconference to discuss curriculum and instructional issues;
  - Develop recommendations for improvement; and
  - Provide face-to-face and/or videoconference coaching services to classrooms.

Parkland School Division made the following recommendations based on its experience:

- Expand the use of videoconferencing-supported PLCs in other areas of teacher development;
- Encourage inquiry-based learning across multiple campuses;
- Closely link the uses of technology with identified educational objectives;
- Create a central repository of curricular-based videoconference resources at various subject and grade levels;
- Partner with knowledgeable external agencies in the development of videoconferencing resources and share those resources among a wider educational community; and

- Share the lessons learned in this project with the wider educational community and provide purposeful supports to ensure positive experiences are transferable to teachers and students at the classroom level.

Parkland School Division reported the following plans for sustainability:

- Videoconferencing equipment has been moved from classrooms into common areas in schools to make the equipment more accessible;
- The centralized technical support model developed during the project continues to work well;
- New videoconferencing opportunities for students are actively being explored;
- Presentations at Alberta Education Jurisdiction Technology Contact (JTC) events and 2Learn.ca Education Society conferences as well as with school staff are being made to extend awareness and forge ties/partnerships within the videoconferencing community. As an example, discussions are underway with Capital Health to supplement program delivery of speech language programming using videoconferencing; and
- Inter-school PLCs involving five schools are being linked via videoconferencing to promote continued use within the jurisdiction. In addition, more teachers are being introduced to videoconferencing as well as the resources identified during the Ambassador Project. More grade levels / schools are being encouraged to join in; however, further expansion of videoconferencing within the jurisdiction will depend on site-based priorities and the perceived benefits of videoconferencing.

Pembina Hills Regional Division made the following recommendations based on its experience:

- Include elements of the research-based approach to learning to maximize student engagement during videoconference-based learning activities;
- Assign jurisdictional teacher/coordinators to support in-school personnel in infusing ICT into learning and to coordinate activities between schools and other jurisdictions;
- Make funds available for all personnel to engage in group or individual professional development related to ICT infusion, as needed; and
- Provide ongoing support to the Videoconferencing Regional Leads Network (VC RLN) and VCAlberta.ca.

Pembina Hills Regional Division reported the following plans for sustainability:

- Multi-site, videoconference-based, classroom learning activities within and beyond the jurisdiction will increase over the next three years;
- Professional development delivery and opportunities for collaboration via videoconferencing will increase over the next three years;
- The Learning Technologies Coordinator will continue to:

  - Work with teachers to infuse ICT in the jurisdiction's classrooms;
  - Establish an advisory group to explore the use of videoconferencing and associated technologies (e.g., electronic whiteboards); and
  - Create and maintain an online resource to support the use of teaching techniques based on research-based learning theory and research;
- Funding for the Learning Technologies Coordinator and for release time for the development of ICT-infused learning activities will continue to be provided through the jurisdictional cooperative pool;
- Westlock Elementary School has created a 0.1 FTE to assist in ICT infusion at the school level; and
- The jurisdiction is investigating the possibility of sharing staff between schools in-person and via videoconferencing.

Sturgeon School Division made the following recommendations based on its experience:

- In addition to ensuring ease-of-use and providing basic training on the operation of videoconferencing technologies, provide additional in-servicing on the peripherals (e.g., electronic whiteboards, document cameras, etc.);
- Provide professional development opportunities that explore instructional uses of the technology within the classroom, and assist teachers in developing interactive projects and establishing links to other classrooms, jurisdictions, or groups;
- Where possible, establish a dedicated videoconferencing facility rather than a mobile suite; and
- Ensure lead teachers play a significant leadership role at the grassroots level.

Sturgeon School Division reported the following plans for sustainability:

Highlighted in the jurisdiction's three-year plan, expansion of videoconferencing will continue annually as follows:

- The videoconferencing PLC will plan and offer professional development and in-services with financial support from the jurisdiction level;
- A variety of videoconference projects will be established;
- Funds will be allocated within the district budget to provide technical training and support from a hardware/infrastructure perspective, including attendance at the annual videoconferencing symposium;
- Additional videoconferencing sites have been added (during Summer 2007) and an evergreening plan has been developed to maintain/replace equipment;
- Schools will be receiving evergreening allocations to enhance their videoconferencing capacity. (All jurisdictional elementary, junior high and high

schools currently have videoconferencing capacity. Over the next three years, primary schools are to be provided the same capacity); and

- The partnership between Guthrie School and the Edmonton Garrison will be enhanced.

3. Connecting Classrooms for Enhanced Learning

Golden Hills School Division No. 75, Horizon School Division No. 67 and St. Albert Protestant Separate School District No. 6 addressed "connecting classrooms for enhanced learning" as their primary theme.

Each jurisdiction reported the following impacts and benefits, attainment of goals and deliverables and plans for sustainability.

Impacts and Benefits

Golden Hills School Division reported the following impacts and benefits for their students, teachers, school district and community:

- Students in small rural communities have greater course choices and equal access to expertise;
- Videoconferencing enhanced the Paleontology 15 course by enabling school-to-school links, class-to-class exchanges, and access to remote expertise, demonstrations and virtual field trips. It was noted that the partnership between the Royal Tyrrell Museum, ATCO and the jurisdiction received an innovation award at the Calgary Mayor's Dinner;
- Interest in videoconferencing has been generated within the community (e.g., a Parent Council meeting highlighting the Paleontology 15 course connected six communities in three geographic locations); and
- Student satisfaction surveys provided evidence that videoconferencing introduced unique classroom experiences in Paleontology 15 that generated enthusiasm and engagement as well as had positive impacts on achievement. Students and teachers also reported enjoying the range of social contacts made possible through videoconferencing.

Teacher/administrator feedback largely indicated that learning was more powerful and students were engaged in higher level thinking skills.

- Golden Hills School Division

Horizon School Division reported the following impacts and benefits:

- Overall, students, teachers, schools, district staff, and community members positively benefited from the project. Students who have traditionally relied on distance learning materials now have increased and improved learning opportunities due to videoconferencing. Courses have been enhanced and schools have been able to share the expertise of subject specialists through the use of videoconferencing.
- According to satisfaction survey results, teachers, students and administrators believe that "videoconferencing can be effectively and efficiently used to increase and improve programming." Programs are enhanced through guest speakers, demonstrations, the use of innovative technologies, and question-answer sessions with experts.

Teachers, students and administrators believe that "videoconferencing can be effectively and efficiently used to increase and improve programming."

- Horizon School Division

- The jurisdiction's ability to support small rural schools has improved, as has their ability to meet individual students' needs.
- Students have developed a sense of globalization, through their opportunities to communicate with groups and individuals in other communities.
- Communications during professional development sessions and learning events have been enhanced through the visual aspect of this technology.
- Costs and time associated with travel have been reduced.
- A culture of risk-taking and problem-solving is developing.

ST. ALBERT PROTESTANT SCHOOLS

St. Albert Protestant Schools reported the following impacts and benefits for students, teachers, schools, the district and the community:

- Students were able to exchange thoughts, ideas and interpretations with their peers within their local community as well as across North America (e.g., students spoke with peers in New York and Michigan about various literary works in the Read-Around-the-Planet project; English classes connected with a Shakespeare expert in London, England to discuss Macbeth; and Social Studies classes videoconferenced with members of a Ugandan village and pen pal relationships continue with the villagers).
- Students' curiosity was stimulated and they expressed a desire for more challenging academic experiences. Students also became more motivated, self-confident, and accountable for their behaviour and learning knowing they would be interacting with other students and schools via videoconference (e.g., Historica Fair presentations and literature circle summaries, Opportunity 7/8 plays). A sense of community

developed among the students when elementary students interacted with students at junior and senior high schools across the jurisdiction (e.g., Grades 3 and 11 mathematics classes and Grades 5 and 10-12 film studies).

- Students gained a more global perspective through videoconferencing (e.g., Christmas traditions and other contemporary topics were shared with people in London, England).
- Students improved their presentation, communication and media awareness skills, their sense of connection to their community, their comfort in the use of various technologies (e.g., computers, web cameras, digital media), as well as their ability to work as a team.

"Videoconferencing was an excellent reminder of the significance of reaching the students through many modalities."

- St. Albert Protestant Schools

- Videoconferencing engaged visual learners and was an integral part of differentiating instruction.
- Teacher best practices were enhanced through the use of videoconferencing, especially in terms of developing leadership (e.g., some students took a leadership role in the classroom with respect to technical/organizational tasks associated with videoconferencing), communication (e.g., listening and presentation skills), and teamwork skills among their students.
- Issues related to distance are minimized. For example, the Educational Technology Council executive met via videoconference on several occasions to discuss concerns, prepare documents and plan a conference.
- Teachers are making professional learning connections and team-building via videoconference with colleagues across the jurisdiction, province and in the United States. Teachers are collaborating in the development of resources and projects, discussing professional issues, engaging in cross-grade planning, sharing curricular best practices, and sharing expertise in the use of electronic whiteboards and videoconferencing equipment. For example, a session at the February 2007 Northern Alberta Teachers' Convention by two of the jurisdiction's lead teachers focused on best practices and first year experiences. How-to sessions were available to teachers at Paul Kane, Sir George Simpson, and Leo Nickerson schools.

Attained Goals and Deliverables

Golden Hills School Division reported having attained the following goals and deliverables:

- A Paleontology 15 course is made available to small rural schools through videoconferencing. A Paleontology 25 course is under development;
- English as a Second Language support is provided to students with limited English skills;

- Course information is provided to students who have been unable to attend classes; and
- Planning for professional development activities is underway.

Horizon School Division reported having attained the following goals and deliverables:

- Six mobile videoconferencing suites including TVs, electronic whiteboards and bridging software are in use across the jurisdiction. Document projectors are being used to support the Art curriculum;
- Five small rural high schools, including 55 students, six teachers, four technicians, and the Director of Curriculum and Instruction, were involved in either delivering or receiving supplemental instruction in courses where it was determined that a site-based specialist was not available or where low enrolments prevented the local offering of a course (i.e., Art, Mathematics 24, Mathematics 31 and Science 24). It was noted that although some use of videoconferencing was made by elementary classrooms, the uptake was minimal due to daily use of the equipment by the high schools. It was also noted that several personnel, process, procedural, technical, and timetabling challenges arose during the project; and
- Professional development opportunities and committee meetings were also facilitated via videoconferencing.

ST. ALBERT PROTESTANT SCHOOLS

St. Albert Protestant Schools reported having attained the following goals and deliverables:

- The overall goal for this project was to "connect classrooms for enhanced learning." Several videoconference activities were held in each of the three pilot schools (one from each jurisdictional level) with the following reported impacts on student learning: heightened motivation; improved communication and presentation skills; increased connections with the outside world; formation of meaningful relationships; increased depth of learning; and stimulation of students' critical thinking and independent inquiry skills; and
- Based on data from an innovation implementation checklist completed by lead teachers, videoconferencing is now being used as an effective tool to broaden and enhance teaching and learning.

Recommendations and Plans for Sustainability

Golden Hills School Division reported several technical, professional development, community support, human resources, and timetabling issues. Based on its experience, the jurisdiction made the following recommendations:

- Provide a range of professional development opportunities, including awareness of potential benefits of and basic training in the use of videoconferencing, and best practices in the instructional uses of videoconferencing.
- Provide strong senior management support and embed videoconferencing in school planning processes. Extend jurisdictional support for videoconferencing in remaining schools in the jurisdiction.
- Ensure parents are informed of their child's involvement in videoconferencing prior to the start of courses and provide videoconferencing demonstrations to staff/students/parents that emphasize the potential of videoconferencing to enhance learning.
- Provide additional support for teachers who provide instruction at multiple/remote sites.
- Provide assurance to teachers that videoconferencing is not replacing them or reducing the value of instruction.

Golden Hills School Division reported having made the following plans for sustainability:

- Expand access to low-enrolment programs (e.g., Math 30, Physics 20, Social 33, Math 31, and French) as well as courses within the International Students Program;
- Secure funding for personnel and equipment;
- Accept videoconferencing program proposals from jurisdictional schools;
- Consider sharing teachers among schools for elementary French course offerings;
- Encourage the creation of PLCs among small rural schools that use videoconferencing to share subject-matter and other expertise (e.g., distance delivery course development, videoconferencing, etc.);
- Provide professional development for administrators, including a demonstration of Paleontology 15 via videoconferencing;
- Advertise courses throughout Alberta, Canada and internationally;
- Continue to work with the Royal Tyrrell Museum to provide information sessions to other jurisdictions and the general public;
- Provide policies/procedures/manuals including, but not limited to, an instruction sheet about videoconferencing etiquette;

- Ensure staff and students receive timely and adequate training in the use of videoconferencing tools including, but not limited to, an informal demonstration of the facilities and equipment by the service provider;
- Begin conversion of traditional distance learning classes to online/videoconference classes;
- Ensure technology is integrated into curriculum;
- Improve audio problems such as audio quality/time delays; and
- Continue programs after the pilot year (e.g., Paleontology 25).

Horizon School Division made the following recommendations based on its experiences:

- Establish common school timetables and a universal clock within the jurisdiction.
- Permanently mount projectors and electronic whiteboards to minimize configuration and alignment delays.
- Establish clear expectations, roles and responsibilities of all participants at delivering and receiving sites.
- Test all equipment and familiarize participants with its use.
- Support teachers in the effective use of videoconferencing through sufficient time and professional development.
- Limit the number of sites, and carefully select and limit the number of initial courses offered via videoconferencing while developing the capacity for effective implementation of this technology.

Horizon School Division reported having made the following plans for sustainability:

- Schools have committed to addressing timetabling issues through a common period.
- Art and a high school French course will be offered in 2007/2008 and clear roles and expectations have been established.
- VoIP has been implemented to assist in communications and complement each videoconferencing unit.
- A budget of $12,000 has been set aside for equipment and professional development and the Director of Curriculum and Instruction will continue to support the project.
- The benefits of videoconferencing are being promoted among students and teachers.

ST. ALBERT PROTESTANT SCHOOLS

St. Albert Protestant Schools made the following recommendations:

- Provide technical and operational support when introducing a technological innovation, as well as ongoing professional development to solidify teacher practice; and
- Allocate at least three years for projects such as these in order that the innovation becomes part of the school/district culture.

St. Albert Protestant Schools reported having made the following plans for sustainability:

- To distribute an innovation implementation checklist for other schools interested in the videoconferencing;
- To create and distribute a CDROM as a resource package for future users of videoconferencing;
- To create a collaborative workspace for the development of a district videoconferencing manual;
- To investigate hiring a jurisdictional videoconference technical specialist to pre-test, make technical adjustments and monitor technical needs; and
- To communicate innovative videoconferencing practices at district technology committee meetings.

Appendix B: References

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18. Wolf Creek School Division No. 72, *FINAL REPORT CFP Phase 2 Extended Implementation of Videoconferencing Programs October 2005,* October 31, 2007.